English

HMA-6500

STEREO POWER AMPLIFIER

INSTRUCTION MANUAL

Congratulations!
HITACHI Hi-Fi products are the proud result of HITACHI engineering research and development and over 50 years of experience in electronics. Laboratories and major testing facilities are maintained in Tokyo and Toyokawa (Japan).
In choosing this fine HITACHI Hi-Fi product you have demonstrated an acute awareness of "getting the best for your money". With HITACHI products this is not an idle boast.

KEY TO ILLUSTRATIONS

① POWER meters
② SPEAKERS switch
③ POWER switch
④ PHONES jack
⑤ DIRECT COUPLING/CONDENSER COUPLING switch
⑥ INPUT terminals
⑦ SPEAKERS terminals
⑧ Power supply cord
⑨ AC outlet (for U.S.A., Canada, Asia & Latin American countries)
⑩ VOLTAGE SELECTOR (for Asia & Latin American countries)
⑪ FUSE (for Asia & Latin American countries)

SAFEGUARD
Electrical energy can perform many useful functions. This unit has been engineered and manufactured to assure your personal safety. Improper use can result in potential electrical shock or fire hazards. In order not to defeat the safeguards, observe the following instructions for its installation, use and servicing.

INSTALLATION

Please bear in mind the following parts when installing the HMA-6500.
1. Install it in a place free from direct sunlight and heat from a stove, etc.
2. Since the HMA-6500 is a large power output amplifier, choose a well ventilated, moisture-free place.
3. Install the amplifier on a stable and vibration-free surface.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

FEATURES

HITACHI have developed a complementary MOS FET which displays superb characteristics as a power amplification device for audio applications. Since both the N-channel and P-channel complementary characteristics of this POWER MOS FET are top-class, this model features a simple 3-stage circuit configuration including the power amplification stage. This is a design which makes for a low distortion across a wide band and which is devoted to engineering only the best in sound quality.

1. **Design oriented toward low distortion across wide band for the best in sound quality**
   The POWER MOS FET features a high input impedance and it is a voltage-driven device. These two merits provide a high power gain and a simply designed circuit configuration. This is why there is minimal noise or phase drift which has an adverse affect on the sound quality, and also why there is no deterioration in the distortion factor. In addition, the frequency response is excellent, the switching speed is fast, stable operation is ensured even in the high frequencies and notch distortion is dramatically reduced. The design makes for a low distortion factor across a wide band with a continuous power output of 50 watts per channel, min., at 8 ohms (20 Hz—20 kHz) with no more than 0.02% total harmonic distortion.
2. **DC amplifier featuring accurate waveform power transmission**
   The capacitors have been eliminated from the NFB loop and even the input capacitors have been put aside in this DC amplifier to effect a great improvement in the low-frequency-range phase characteristics. The first stage employs low noise transistors with a high withstanding voltage and well-matched pairing characteristics for a reduction in center point drift. Furthermore, there is a DIRECT COUPLING/CONDENSER COUPLING switch which is provided to safeguard the speakers from damage caused by DC component leakage from the externally connected equipment (such as the control amplifier).
3. **Connection facilities for two pairs of speakers**
   This amplifier can accommodate two pairs of speakers, and by selecting them with the speakers switch, you can compare the sound reproduced by each system.
   You can also listen to the sound from one speaker system in one room and from the other speaker system in another room.
4. **High-reliability protection circuitry**
   In order to protect the POWER MOS FET, a current limiter circuit which relies on the detection of the area of safe operation and DC voltage detection circuit have been installed. This circuitry features high reliability which enables it to cope with accidents.
5. **Large-sized power meters (peak meters)**
   The model comes with large-sized power meters which enable the balance between the left and right channels and also the output level to be checked. Their size and performance are what you would expect to find in a POWER MOS FET amplifier. The power meters adopt a logarithmic compression circuit for RMS value displays of the detected peak values. This is why they can track peak signals and enable the displayed values to be read out directly.

Important for U.K.:
WARNING: This apparatus must be earthed.
The wires in this mains lead are coloured in accordance with the following code:

Green and Yellow	: EARTH
Blue	: NEUTRAL
Brown	: LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows. The wire which is coloured GREEN and YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or coloured GREEN or GREEN and YELLOW.
The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.
The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

CONTROLS AND SWITCHES

① POWER meters

These indicate the output level of the power amplifier. The scales of these POWER meters express the output when the impedance of the speakers is 8 ohms in watts and decibels. (This is the RMS value display of detected peak values). When the speaker impedance is 6 ohms, the output is then 1.3 times the value indicated on the meters, and 2 times that value when the speaker impedance is 4 ohms. For example, if the pointers deflect to near 10 watts on the scale with a speaker impedance of 6 ohms, the actual output level will be about 13 watts.

The meter pointers are designed to point to '0' when the POWER switch ③ is set to ON.

② SPEAKERS switch

OFF . . . . . No sound is heard from the speakers. Use headphones for private listening. For listening to the sound through the speakers and headphones, set this switch to A or B.

A . . . . . The sound is heard through the speakers which are connected to the A speaker terminals⑦.

B . . . . . The sound is heard through the speakers which are connected to the B speaker terminals⑦.

A+B . . . . . The sound is heard through the speakers which are connected to the A speaker terminals ⑦ and B speaker terminals⑦.

Connect speakers with an impedance of between 8 and 16 ohms to both the A and B terminals⑦.

③ POWER switch

When this switch is set to ON, power is supplied to this amplifier, and the POWER meter lamps light up. The HMA-6500 contains a muting circuit and so it takes about 4 seconds after this switch has been set to ON for this amplifier to operate normally.

④ PHONES jack

Insert the plug of the stereo headphones into this jack. If you want to listen with the headphones only, set the SPEAKERS switch ② to OFF.

⑤ DIRECT COUPLING/CONDENSER COUPLING switch

DIRECT COUPLING:

This switch is normally kept at this position. The model will then function as a DC amplifier.

CONDENSER COUPLING:

Set this switch to this position when DC components are leaking from equipment (such as the control amplifier) connected to the INPUT terminals *⑥. Low-frequency signals below 5 Hz will be cut off and the DC components will be prevented from being applied to the speakers.

* How to check whether there is any DC component leakage . . . . DC components are leaking if you hear a popping sound through the speakers when the DIRECT COUPLING/CONDENSER COUPLING switch is selected.

Operation procedure for power switches

The HMA-6500 incorporates a muting circuit to safeguard against shock noise. Nevertheless, you can still damage your speakers if you operate the amplifiers carelessly, so be sure to follow the procedure outlined below.

Switching the power on

Control amplifier's volume control	Minimum
↓	
Power amplifier's speaker switch	OFF
↓	
Control amplifier's power switch	ON
↓	
Power amplifier's power switch	ON
↓	
Power amplifier's speaker switch	A,B or A+B

Switching the power off

Control amplifier's volume control	Minimum
↓	
Power amplifier's speaker switch	OFF
↓	
Power amplifier's power switch	OFF
↓	
Control amplifier's power switch	OFF

INSTALLATION PRECAUTIONS

1. Placement on an ordinary shelf

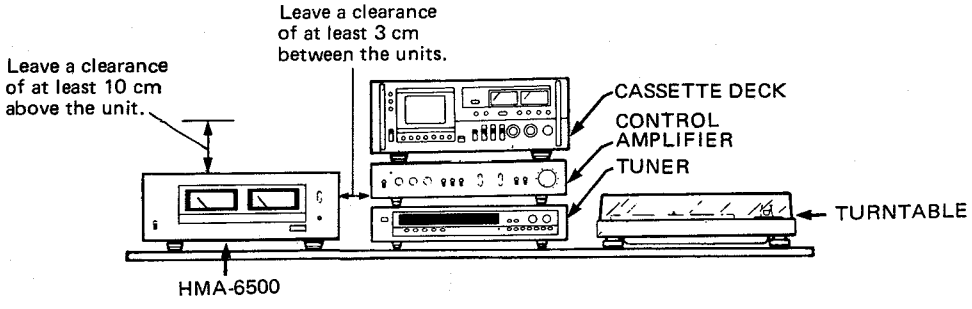


Fig. 1 (Correct)

NOTES:

1. This unit is a high-output power amplifier and so it generates a great deal of heat when operating. Therefore, choose a well ventilated location for installation. Install the units as illustrated in Fig. 1. When using the power amplifier at high-output power levels, the top cover will heat up and so it is not advisable to touch this cover.

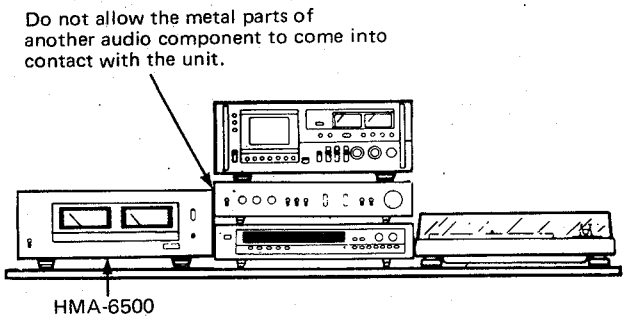


Fig. 2 (Incorrect)

2. Hum noise is sometimes generated if the metal parts (like case, front panel, etc.) of another audio component or metal rack come into contact with the unit, as shown in Fig. 2.
3. When a tape deck is placed close to this unit or it is placed on this unit, inductive hum may be generated. If it happens, change the places of each unit or keep the deck away the unit.

2. Rack installation

The installation indicated in Fig. 3 is recommended. As an audio rack, model No. LA-V5300 is recommended.

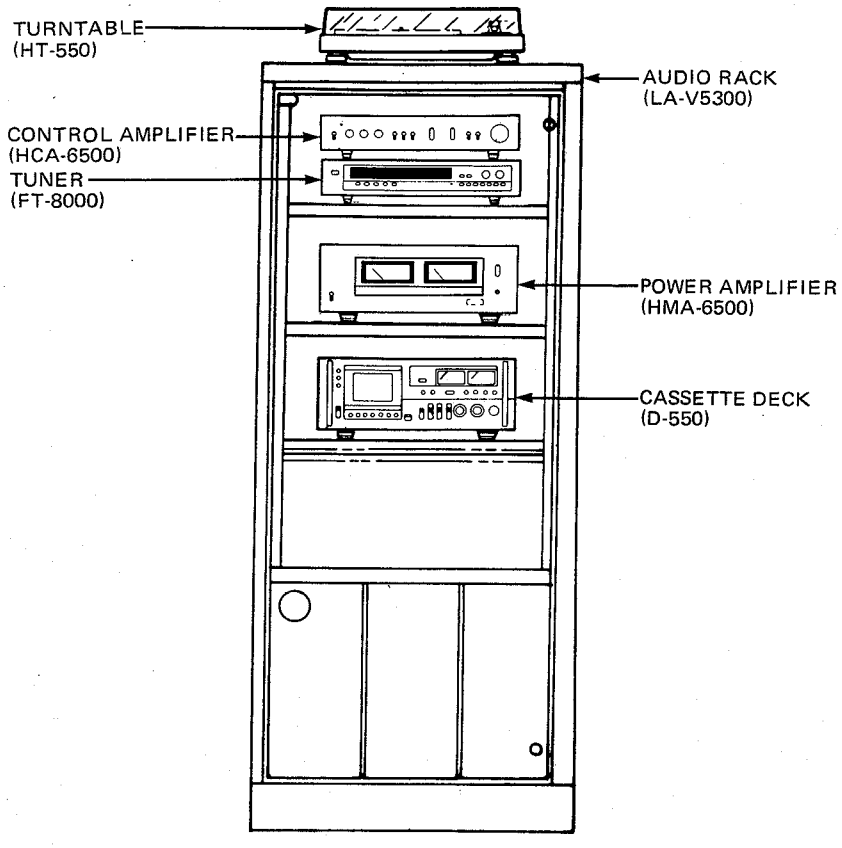


Fig. 3 (Installation in vertical rack)

NOTES:

1. If your audio rack is enclosed and poorly ventilated, or when you use the HMA-6500 at high output power levels, do not install this unit inside the rack.
   In case you need to install this unit inside the rack, be sure to leave a clearance of at least 10 cm above the unit and at least 3 cm beside the unit.
2. When inductive hum is generated during tape play, change the place of the deck or keep it away the amplifier.

PROTECTION CIRCUITS

The amplifier features the following protection circuits for the ultimate in safety.

(1) Protection of the POWER MOS FET

In order to protect the POWER MOS FET, the area of safe operation detection circuit causes the relay to be actuated and the sound is no longer heard in cases when the speaker terminals are shorted, or when the speakers are handling high inputs with a low load impedance (such as when 4-ohm speakers are connected to both speaker terminals A and B and the SPEAKERS switch is set to A+B. If this happens, set the POWER switch to OFF, check whether the speaker connecting cords have been shorted, whether the speaker leads have been connected improperly, and whether the impedance is too low. Remedy the fault, and wait at least 10 seconds after switching the POWER switch to OFF before switching it on again. (If this switch is set to ON in less than 10 seconds, the amplifier may not operate.)
If the relay is actuated again after the fault has been traced to a short and after it has been remedied, it means that there is a failure inside the amplifier. Get in touch with your nearest audio dealer or service station for repairs.

(2) Protection of the speakers

The speakers are damaged when DC voltage is generated at the speaker terminals. This is why the HMA-6500 has a DC voltage detection circuit which actuates the relays and shuts off the speaker circuits, thereby protecting the speakers.
However, if DC voltage is generated, be sure to switch on the power after checking (1). If it does not operate normally, the fault may lie with the amplifier so contact your nearest audio dealer or service station for repairs.

WHAT TO DO IF?

A variety of problems may result from the mishandling of the amplifier. When a problem occurs, check the table below which describes possible problems occurring in your amplifier. Since the amplifier is completely checked and adjusted before shipping, there are no user serviceable and adjustable parts inside. But if the amplifier is not operating correctly and you are unable to restore normal operation by following the detailed procedure in the table below, do not remove the cover of the set or attempt any further adjustments. Unplug the set and contact your dealer or nearest HITACHI service station.

	SYMPTOM	DIAGNOSIS	REMEDY
NORMAL PLAYING	Power meter lamps do not come on and the sound is not heard although the power switch is set to ON.	1. Line plug is loose. 2. Fuse blown.	1. Plug the AC line plug into AC outlet. 2. Replace the fuse.
	Power meter lamps come on but the sound is not heard.	1. The speaker cords are loose. 2. The speakers switch is set to OFF. 3. The tape monitor switch is set to TAPE-1 or TAPE-2.	1. Connect the speaker cords to the speaker terminals. 2. Set the speakers switch to A, B or A+B. 3. Set the tape monitor switch to SOURCE.
	Sound heard through only one channel.	1. The speaker cord of one channel is loose. 2. BALANCE control is turned fully clockwise or counter-clockwise.	1. Connect the speaker cord to the speaker terminals. 2. Set the BALANCE control to the midway position.
	Sound separation is not distinct and bass is poor.	1. Polarities of the speaker connections are not aligned properly.	1. Correct the polarities on either the speakers or the amplifier.
	The speaker protection circuitry may at times be actuated and the sound will be cut off from the speakers.	1. The output level is too high (always over 75 W).	1. Turn the volume down to the proper level.
PLAYING RECORDS	The sound of both channels or one channel is not heard.	1. Faulty connection of the output cords of the turntable.	1. Connect the output cords of the turntable to the control amplifier securely.
	Hum and buzz	1. Faulty connection of the output cords of turntable. 2. Pin jack connection is loose. 3. Ground wire is loose. 4. There is a line cord near the phono cords of turntable.	1. Connect the output cords of the turntable to the control amplifier securely. 2. Connect the pin plug to the pin jack. 3. Connect the ground wire of the turntable to GND terminals of the control amplifier. 4. Separate the line cord from the phono cords of the turntable.
	Increasing the volume causes howl.	1. Sound of the speakers is making the turntable vibrate.	1. Move either the speakers or turntable. Do not increase the BASS sound level excessively.
	Output tone is mixed with noise and treble is not clear.	1. Stylus is worn out. 2. Record is worn out. 3. Dust is adhering to stylus. 4. Stylus is improperly mounted. 5. Tracking force is not correct. 6. The TREBLE sound is too high.	1–6. Correct the trouble concerned.
LISTENING TO BROADCASTS	Continuous noise in AM.	1. Static. 2. Noise caused by other electric appliances.	1,2. Set up a good and high outdoor antenna and ground it perfectly.
	Only when tuning AM broadcasts, hum noise is heard.	1. Generally caused by high voltage lines or other electric appliances.	1. By reversing the polarity of AC line plug, the hum is reduced. But it is very difficult to remove this noise completely.
	Continuous or intermittent noise.	1. Ignition noise from automobile engines.	1. Set up an outdoor FM antenna instead of using attached FM feeder antenna.
	The sound of FM program contains noise like zzz. More noise is included in FM stereo reception than FM mono.	1. The signal input of antenna terminals is too weak to receive FM stereo broadcasts.	1. Set up an outdoor FM antenna.

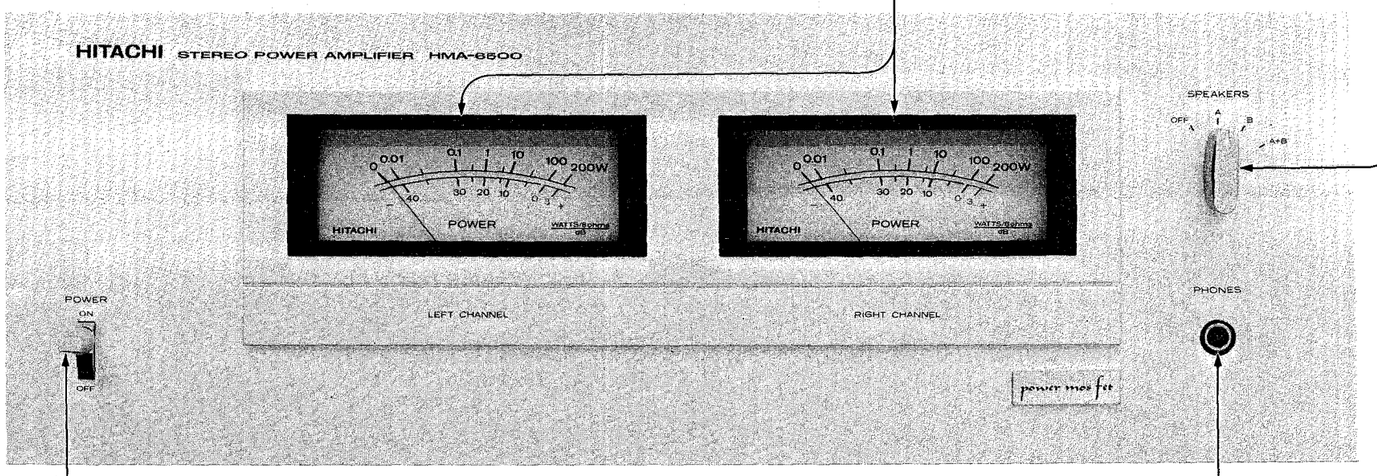
SPECIFICATIONS

Continuous RMS power output	50 watts per channel min. RMS, at 8 ohms from 20 Hz to 20 kHz, with no more than 0.02% total harmonic distortion. 55 w/ch + 55 w/ch (8 ohms, 1 kHz, T.H.D. 0.02%) 53 w/ch + 53 w/ch (4 ohms, 1 kHz, T.H.D. 0.02%)
Harmonic distortion (both channels driven)	
(at rated output)	Less than 0.02%
(at 1/2 rated output)	Less than 0.003%
Power bandwidth (IHF)	
(at 1/2 rated output)	5 Hz—60 kHz (8 ohms, T. H. D. 0.05%)
Frequency characteristics	
(at 1 W output)	DC—100 kHz $^{+0}_{-1}$ dB (DIRECT COUPLING) 5 Hz—100 kHz $^{+0}_{-1}$ dB (CONDENSER COUPLING)
Input sensitivity (impedance)	1 V (50 kohms)
Damping factor	50 (1 kHz, 8 ohms)
Channel separation	80 dB (1 kHz, 8 ohms, input shorted)
Signal-to-noise ratio	
(IHF, A network)	115 dB
Speaker impedance	4—16 ohms (A, B), 8—16 ohms (A+B)
Power supply	AC 120 V 60 Hz, ~ 120 V/220 V/240 V 50/60 Hz
Power consumption	220 W or 320 VA (AC 120 V) 430 W (~ 220—240 V)
Dimensions	435 (W) x 153 (H) x 306 (D) mm 17-1/8 (W) x 6-1/32 x 12-1/16 (D) in.
Weight	9.4 kg (20.7 lbs.)

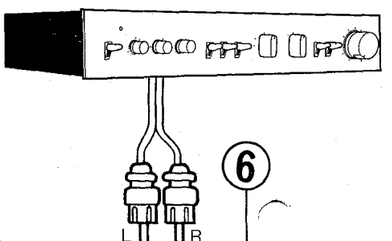
Specifications and designs may be changed without notice for improvement.

HMA-6500

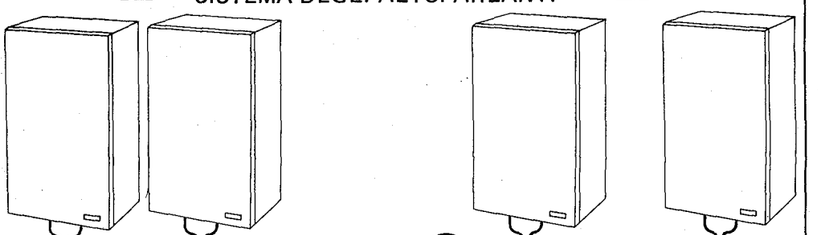
HITACHI

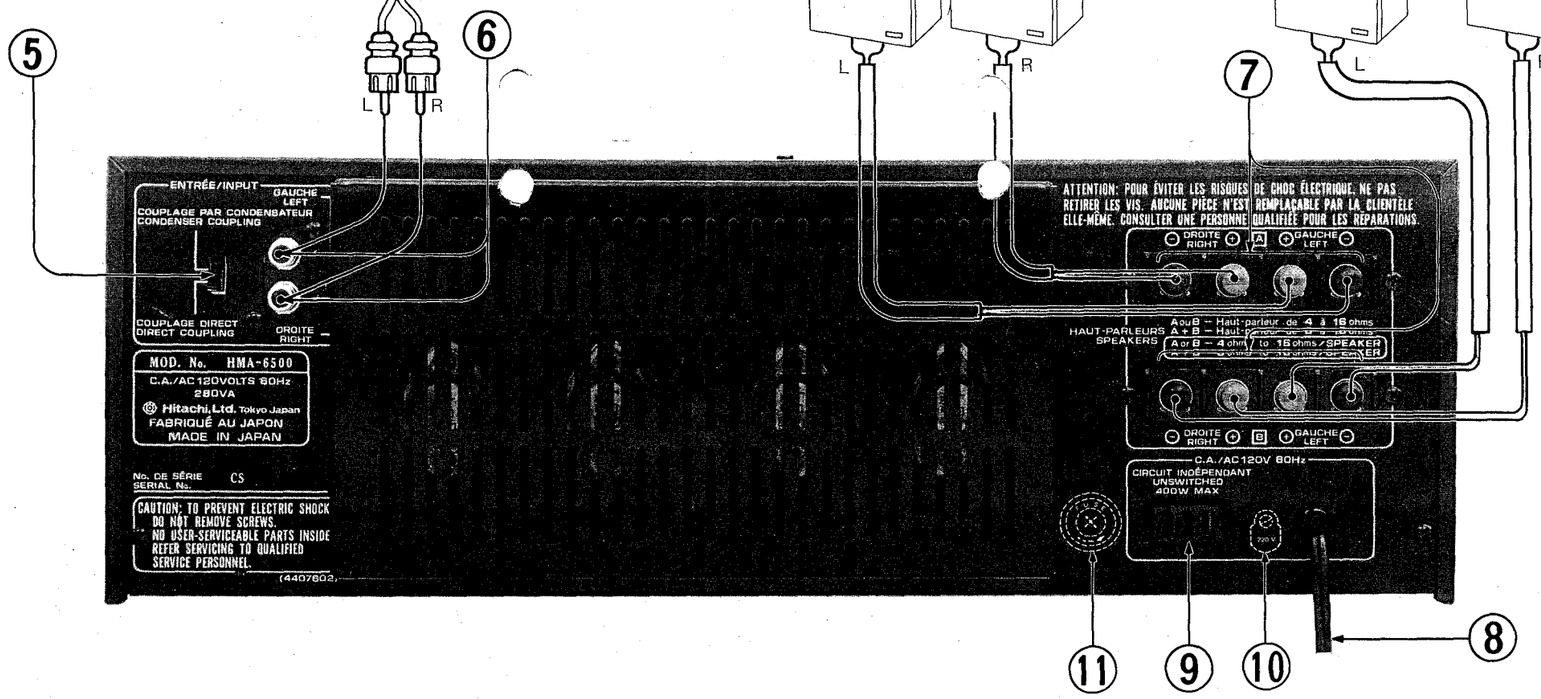


STEREO CONTROL AMPLIFIER
STEREO-STEUERVERSTÄRKER
AMPLIFICATEUR DE
COMMANDE STEREO
AMPLIFICATORE DI
CONTROLLO STEREO



LOUDSPEAKER SYSTEM
LAUTSPRECHERGRUPPE
HAUT-PARLEURS
SISTEMA DEGLI ALTOPARLANTI





AC outlet: The HMA-6500 has an UNSWITCHED 400 watts maximum outlet. (for U.S.A., Canada, Asia & Latin American countries)

Wechselstromausgang: Der HMA-6500 besitzt einen ungeschalteten (UNSWITCHED) Ausgang von 400 Watt maximal. (für USA, Kanada, Asien und Lateinamerika)

Sortie CA: Le HMA-6500 possède une sortie CA non-commutable de 400 Watts maximum. (pour les appareils vendus seulement aux U.S.A. et au Canada)

Uscita a C.A.: Il modello HMA-6500 possiede un'uscita non inserita di 400 Watt massimo. (per gli U.S.A., Canadà, Asia e America Latina)

Any hum caused when the control amplifier is installed near this model can be reduced by unplugging the power plug of the power amplifier and/or control amplifier, turning it upside down and plugging it in again.

Falls dieses Gerät in der Nähe des Steuerverstärkers aufgestellt wird und Brummgeräusch zu hören ist, den Netzstecker von Leistungsverstärker und/oder Steuerverstärker herausziehen und in umgedrehter Stellung wieder einstecken. Dadurch wird im allgemeinen das Brummen reduziert.

On peut réduire un ronflement quelconque apparaissant quand l'amplificateur de commande est placé près de ce modèle, en débranchant la prise d'alimentation secteur de l'amplificateur de puissance et/ou de l'amplificateur de commande, puis en le retournant complètement et en le rebranchant.

Il ronzio causato dall'installazione dell'amplificatore di controllo vicino a questo apparecchio può essere ridotto staccando la spina del cordone di alimentazione dell'amplificatore o dell'amplificatore di controllo rivoltandola prima di riinserirla nella presa.

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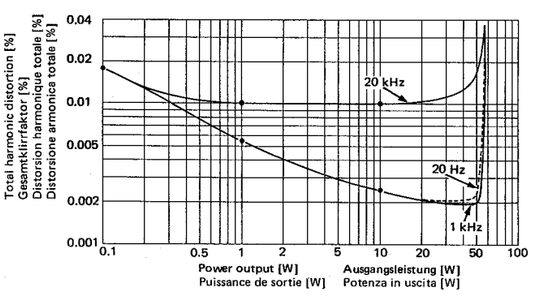
Power Output vs. Total Harmonic Distortion Characteristics
Ausgangsleistung im Vergleich zum Gesamtklirrfaktor
Puissance de sortie par rapport à la distorsion harmonique totale
Potenza in uscita contro caratteristiche di distorsione armonica totale

Input: INPUT terminal
Output: 8 ohms load, both channels driven

Eingang: Eingangsklemmen (INPUT)
Ausgang: 8 Ohm Belastung, beide Kanäle betrieben

Entrée: Borne INPUT
Sortie: Charge de 8 ohms les deux canaux en fonctionnement

Ingresso: Terminale INPUT
Uscita: Carico di 8 ohm, con entrambi i canali in funzione



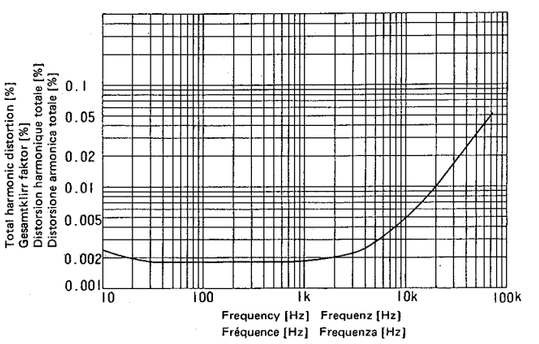
Frequency vs. Total Harmonic Distortion Characteristics
Frequenz im Vergleich zum Gesamtklirrfaktor
Fréquence par rapport à la distorsion harmonique totale
Frequenza contro caratteristiche di distorsione armonica totale

Input: INPUT terminal
Output: 8 ohms load, both channels driven 30 W

Eingang: Eingangsklemmen (INPUT)
Ausgang: 8 Ohm Belastung, beide Kanäle betrieben, 30 W

Entrée: Borne INPUT
Sortie: Charge de 8 ohms les deux canaux en fonctionnement 30 W

Ingresso: Teminale INPUT
Uscita: Carico di 8 ohm, con entrambi i canali in funzione, 30 W



Measuring Equipment
Audio Osc.: MODEL 4494A
AC Voltmeter: MODEL 3400A
Distortion Meter: MODEL 4333A

Meßgeräte
Tonfrequenzgenerator: Modell 4494A
Wechselstrom-Voltmeter: Modell 3400A
Klirrfaktormesser: Modell 4333A

Equipement de mesure
Générateur à basse fréquence: Modèle 4494A
Voltmètre CA: Modèle 3400A
Appareil de mesure de distorsion: Modèle 4333A

Apparecchi di misurazione
Oscilloscopio audio: Modello 4494A
Voltmetro a C.A.: Modello 3400A
Scala di distorsione: Modello 4333A

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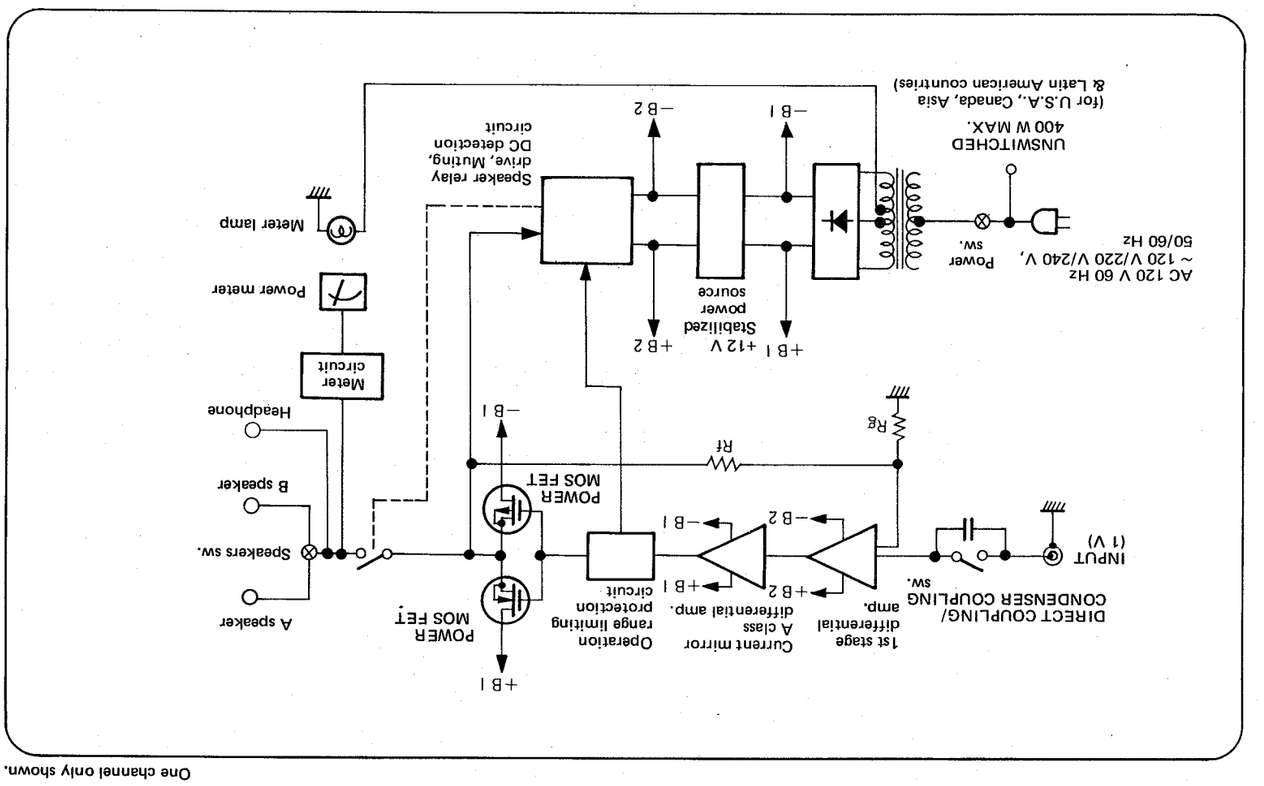

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